



## Optic nerve sheath diameter in severe pre-eclampsia versus healthy pregnant women: a prospective, observational study

### Backgrounds :

Severe pre-eclampsia is associated with an elevation of intracranial pressure (ICP). Optic nerve sheath diameter (ONSD) is a non-invasive surrogate of invasive ICP measurement. ONSD superior to 5.8 mm is usually diagnostic of raised ICP.

In this study, we aimed to compare the ultrasound measured ONSD in severe pre-eclamptic parturient to a group of healthy pregnant women, and its relationship to the severity of this disease.

### Methodology :

One hundred consenting women were enrolled in a single site prospective and observational study. Fifty patients with severe pre-eclampsia (CNGOF criteria) were compared to 50 uncomplicated pregnant controls.

All of them met the inclusion criteria of an age older than 18 years and 28 weeks or further gestation. We performed ONSD measurements using a 7.5 MHz ultrasound linear probe, with a mechanical index inferior to 0.3 as recommended.

For each optic nerve, two measurements were made in two different planes: transversal then sagittal. We collected demographic, anthropometric, biological and relevant pregnancy data.

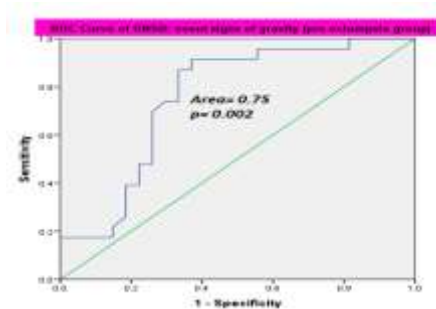
### Results :

Both groups were comparable for demographic, anthropometric, and biological data . The results bringing together the factors which can influence the intracranial pressure as well as the variations of ONSD are grouped in this attached table

	Pregnant with severe pre-eclampsia	Uncomplicated pregnant controls	p
Mean arterial pressure (mmHg)	107±30	86±20	<10 <sup>-3</sup>
Age of pregnancy (GW)	33± 4	38± 2	<10 <sup>-3</sup>
the median ONSD (mm)	6.3	5.4	<10 <sup>-3</sup>

Among severe pre-eclampsia group, 30 patients had ONSD superior to 5.8mm (60%) versus only 5 among healthy pregnancies group (10%), p inferior to 10<sup>-3</sup>.

The results displayed on the ROC curve indicate a notable correlation between ONSD and the appearance of severe and critical symptoms in pre-eclampsia, with an area under the curve measuring 0.75 and a p-value of 0.002. By using a cut-off value of 5.75mm, the sensitivity was found to be 91%, while the specificity was 63% (as shown in the Figure).



### Conclusion

Assessment of ONSD using ultra sound seems to be reliable, rapid, non invasive, reproducible, and could be a good routine to monitor severity of preeclampsia with cautions regarding a mechanical index of the ultra sound probe.